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Benoit et al.

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[54] **HOSPITAL BED WITH SELECTOR MECHANISM**

[75] Inventors: **Roland A. Benoit,** Danielson; **Richard H. Duprey,** Dayville, both of Conn.

[73] Assignee: **Interroyal Corporation,** New York, N.Y.

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[52] **U.S. Cl.** **5/68,** 5/66

[51] **Int. Cl.** **A47c 3/32,** A47c 7/10

[58] **Field of Search** 5/66–69, 62

[56] **References Cited**

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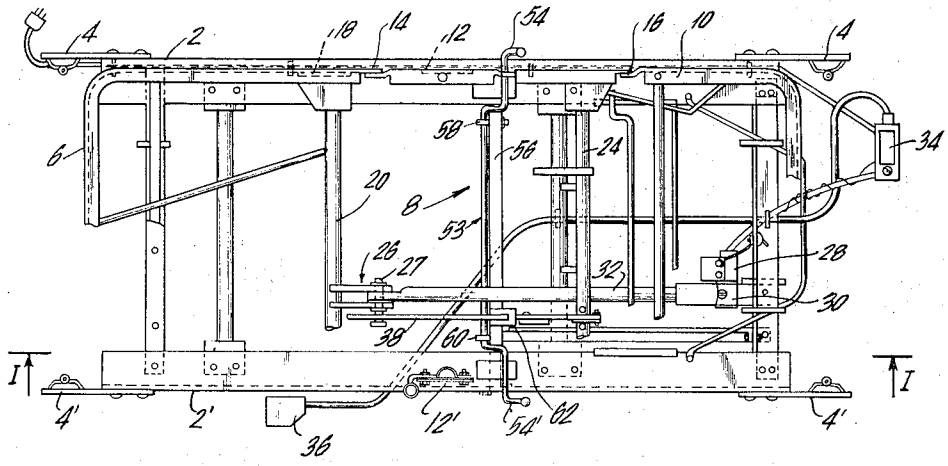
Primary Examiner—Casmir A. Nunberg

Attorney, Agent, or Firm—Arthur A. March

[57] **ABSTRACT**

A hospital bed which is adapted to be placed in either the Fowler or the Contour position is provided with a manually operated selector mechanism so that with one operation mechanism both the head and foot assembly or the head assembly alone may be elevated. The selector mechanism engages a mechanical linkage which transmits the elevation of the head section to the foot section.

2 Claims, 4 Drawing Figures



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SHEET 1 OF 3

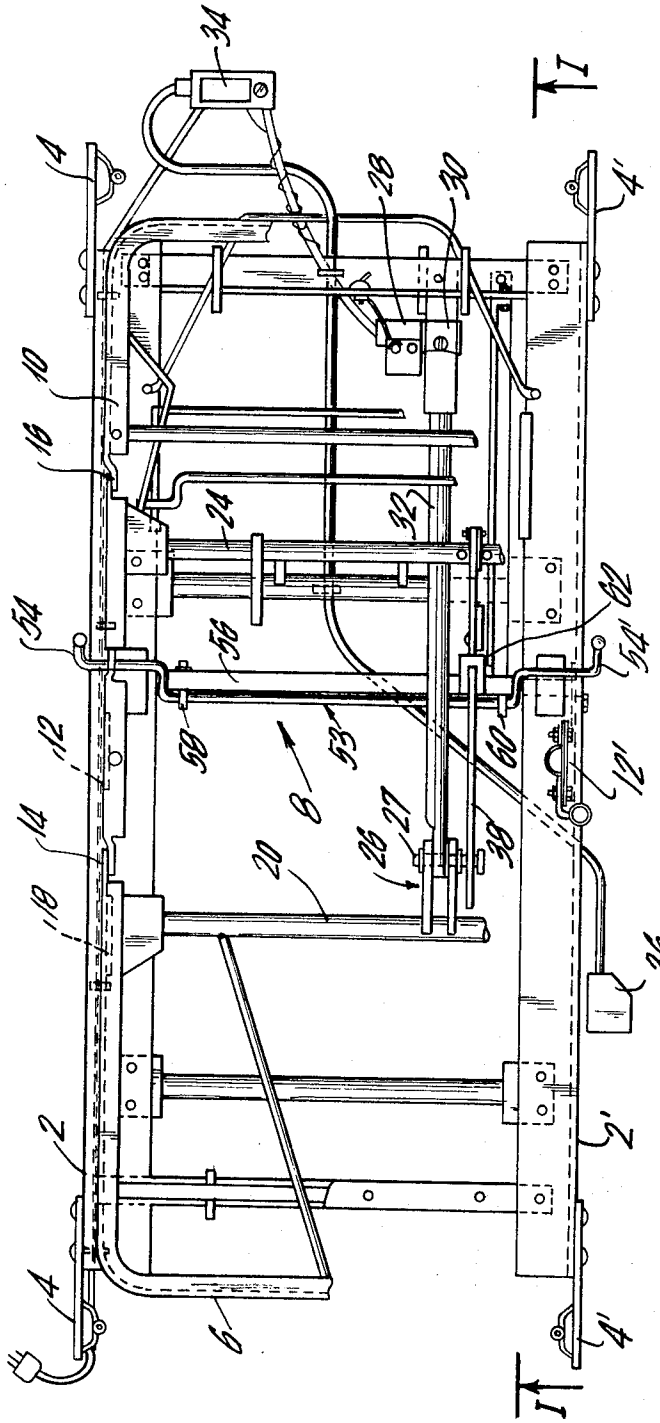


FIG. 1

INVENTORS
ROLAND A. BENOIT
RICHARD H. DUPREY

BY
MARCH AND LEFEVER
ATTORNEYS

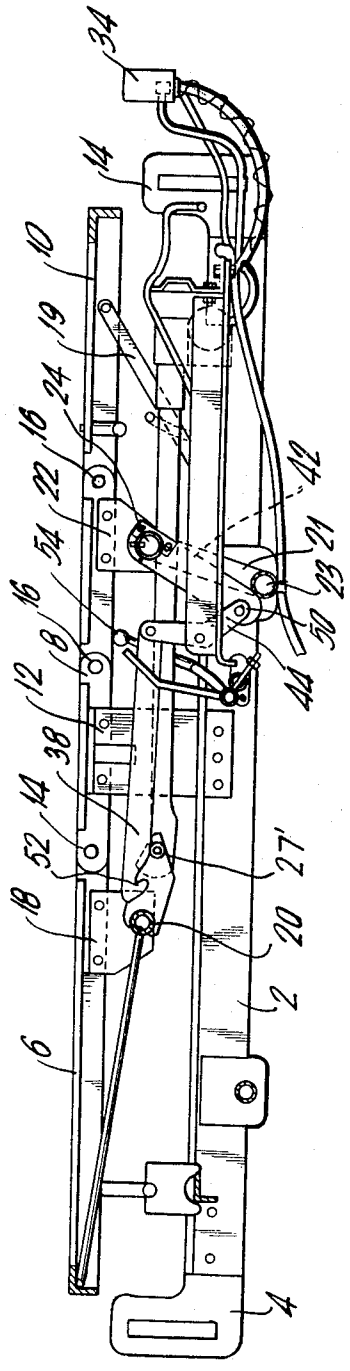


FIG. 2

INVENTORS
ROLAND A. BENOIT
RICHARD H. DUPREY

BY
MARCH AND LE FEVER

ATTORNEYS

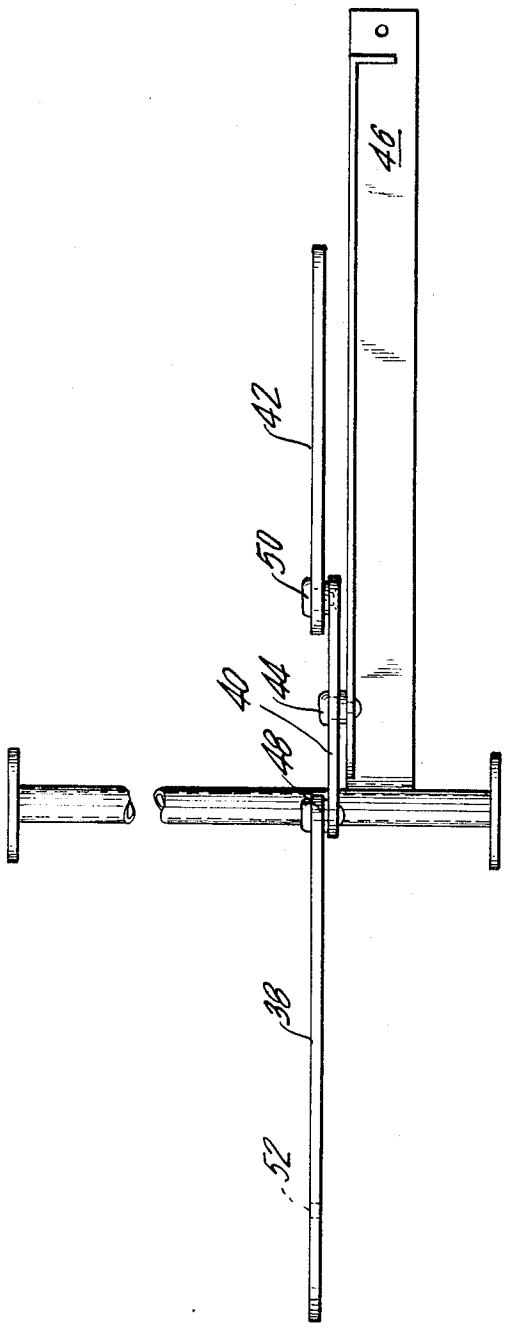


FIG. 3

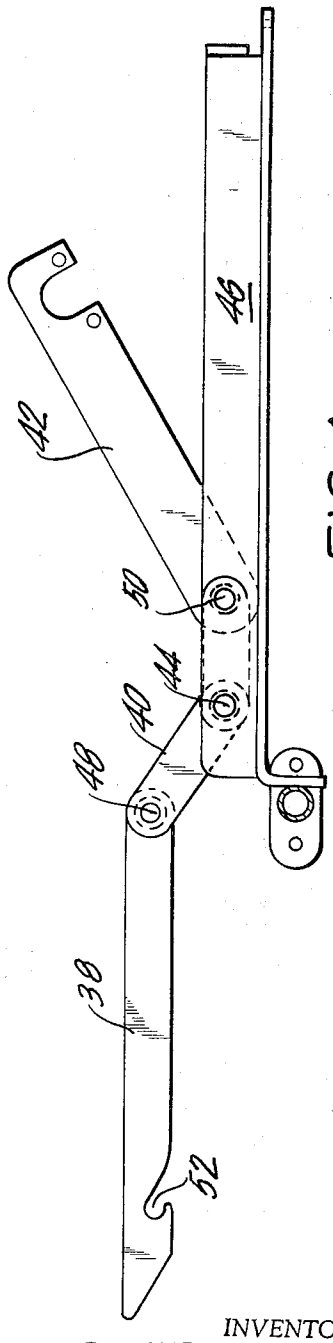


FIG. 4

INVENTORS
ROLAND A. BENOIT
RICHARD H. DUPREY
BY
MARCH AND LEFEVER
ATTORNEYS

HOSPITAL BED WITH SELECTOR MECHANISM

BACKGROUND OF THE INVENTION

There are presently provided by the prior art adjustable beds for use in hospitals, nursing homes and the like for the aged abd infirm which are adjustable to the Fowler position, that is, one which elevates the head end of the bed and so the head and shoulders of the occupant, the Contour position, that is one which elevates the knees of the occupant by elevating the foot assembly in an "inverted V" configuration, or both. These prior art hospital beds are normally equipped with a pair of mechanical elevating means which may be operated singly to elevate either the head or the foot assembly to the desired position. Hospital beds are also provided where the mechanical means are operated by electric motors controlled by a series of switches which enable the bed occupant or the attendant to select any desirable combination of bed configurations.

It is readily apparent, therefore, that the apparatus which provides the occupant with the desirable choice of positions can be complicated and expensive requiring the use of a number of electrical circuits and prime movers with their attendant mechanism.

It is the object of this invention to provide an improved hospital bed which enables the occupant, or the attendant, to select either the Fowler position, or both the Fowler and the Contour position with a simple manually operated selector mechanism. Thus the improved apparatus of this invention requires only one mechanical elevating mechanism which may be either hand or motor driven with the attending savings in construction costs.

BRIEF DESCRIPTION OF THE INVENTION

The apparatus of this invention is constructed with a simple mechanical linkage which transfers elevating force applied to the head assembly by an integrated elevating mechanism to the foot assembly such that simultaneously with the head elevation the Contour configuration is obtained by raising the middle portion of the foot assembly in the normal "inverted V" position, thus elevating the occupant's knees.

The mechanical linkage which brings about this simultaneous adjustment of the bed configuration is quickly and fixedly disengaged by means of a selector handle which serves to connect the linkage or disconnect it by either the bed occupant or the attendant.

SPECIFIC DESCRIPTION OF THE INVENTION

The invention will be more clearly explained by reference to the accompanying drawings in which:

FIG. 1 represents a top plan view of a bed frame adapted with the selector mechanism of the invention, partially broken away for clarity;

FIG. 2 is a side view of the embodiment of FIG. 1 taken along the line I—I of FIG. 1;

FIG. 3 is a top plan view of the selector linkage mechanism; and

FIG. 4 is a side view of the linkage of FIG. 3.

Turning now to the drawings, reference numeral 2 and 2' indicates side rails which terminate in plate members 4 and 4' which may be used to attach the side rails together by means of transverse bars and to attach the normal hospital head and foot frames to the apparatus.

The mattress support for the hospital bed of this invention comprises a head assembly 6, an intermediate assembly 8 and a foot assembly 10. As shown, these assemblies are constructed in the usual fashion, normally of angle iron or the like, the head and foot portion being bent into a U-shaped configuration as shown in the drawings.

The intermediate portion 8 is attached by means of plates 12 and 12' to the side rail members 2 and 2'. This attachment is normally rigid such as by welding, rivetting, or the like.

One end of intermediate assembly 8 is attached to the head assembly 6 by the pivotal attachment shown at 14; the other end of intermediate assembly 8 is pivotally attached to foot assembly 10 at pivot point 16.

Head assembly 6, at a point intermediate pivot 14 and the end thereof, is equipped with a pair of opposed plate members 18 and 18' (not shown) which are secured to the head assembly by rivets or the like and which are spanned by a tubular member 20 rigidly secured thereto. Similarly foot assembly 10 is equipped with a pair of opposed plate members 22 and 22' (not shown) similarly attached to the opposed sides of the head assembly 10 and spanned by a fot assembly tubular member 24, rigidly secured thereto.

At a point intermediate the ends thereof, head assembly tubular member 20 is equipped with a clevis member 26, a pair of opposed holes in the extremity thereof being spanned by a clevis pin 27 held in fixed relation to the clevis by the usual washers and cotter pins known to the art.

An elevating mechanism for raising and lowering the head assembly 6 comprises a motor 28 which operates in conjunction with a gear box 30 to impart rotational force to an Acme screw operating within an elevating arm 32 in the manner which is known to the art.

Elevating arm 32 is attached to clevis 26 by means of clevis pin 27 and as the motor operates the Acme screw elevating mechanism, elevating arm 32 moves transversely, imparting elevating and depressing motion through clevis 26 to head assembly tubular member 20 and head assembly 6.

The electric motor 28 is electrically connected to junction box 34 which is in turn connected to a source of electrical power, not shown, and to pendant control 36. Pendant control 36 is equipped with the normal up and down electrical switches to permit the operator to raise or lower the head assembly as desired.

In accordance with the inventive concept, head assembly 6 is connected by means of a linkage system to foot assembly 10, the linkage system being manually engageable or disengageable such that the head assembly may be raised or lowered alone or the head assembly and the foot assembly may be simultaneously raised or lowered by means of one elevated mechanism.

This linkage system which is more clearly shown in FIGS. 3 and 4 comprises a head linking member 38, an intermediate linking member 40 and a foot linking member 42. The intermediate linking member 40 is pivotally attached at 44 through plate member 46 to one of the side rail members of the bed frame.

One end of the intermediate linking member is pivotally attached to head link 38 at 48 and the other end to foot link 42 as shown at 50.

Foot link 42 is rotatably attached to foot assembly tubular member 24 such that upward movement of foot link 42 imparts upward movement to foot assembly tu-

bular member **24** and thus elevates the middle portion of foot assembly **10** into the "inverted V" configuration, the assembly pivoting about pivot points **17** and **17'** (not shown).

Head linking member **38** is provided at the end opposite pivot attachment **48** with a notch **52** which is adapted to engage or disengage an extremity of clevis pin **27**, such as **27'**.

The operating mechanism for engaging and disengaging the linkage system comprises a selector rod assembly **52** which is shaped to conform to the outline of the mattress support and to extend upwardly on each side of the bed terminating in operating handles **54** and **54'**. The selector rod assembly is pivotally attached to transverse structural member **56** by pivot attachments **58** and **60** which may be eye-bolts or the like. The attachment is such that when operating handles **54** or **54'** are moved toward the foot of the bed or toward the head of the bed the selector rod assembly rotates about the points of pivotal attachment.

At a point on selector rod assembly **52** immediately below head link member **38** there is attached, by welding or otherwise, a selector arm lever **62** containing in the upper portion thereof an elongaged slot within which head link member **38** operates. The design of this selector arm is such that when the operating handle **54** or **54'** is moved toward the head assembly, head linkage member **38** is elevated by selector arm lever **62,** and notch **52** becomes disengaged from clevis pin extension **27'**. Conversely when operating handle **54** or **54'** is moved toward the foot assembly, the selector arm moves to the right as shown in FIG. **1** and allows the head link member **38** to become depressed and slot **52** is then in position to engage clevis pin extension **27'**.

When the apparatus is in the level position as shown in FIGS. **1** and **2** and the operating handle **54** and **54'** is in the position toward the foot assembly, elevation of the head assembly **6** will cause the elevation of the foot assembly **10** as follows: rotation of the motor **28** in the elevating direction is transmitted through gear box **30** and elevating arm **32,** clevis pin **27,** clevis **26,** head assembly tubular member **20,** head assembly plate members **18** to head assembly **6,** which pivots about pivots **14** and **14'** to move into its upright position. Elevational transverse movement of elevating arm **32** causes clevis pin **27** and extension **27'** to move downwardly and to the left as shown in FIGS. **1** and **2.** Since the notch **52** of head link assembly **38** is engaged with clevis extension pin **27',** head link **38** moves to the left as shown in FIG. **4** causing intermediate link member **40** to pivot about pivot point **44.** This movement causes foot link member **42** to move upwardly in substantially its same plane, pivoting only slightly about its point of attachment to foot assembly transverse tubular member **24.** This upward movement causes foot assembly **10** to pivot about pivot point **17** and to assume its elevated contoured position, the extremity of foot assembly **10** being held in substantially its present position by means of extension arm **19** and rotating arm **21** pivotally joined at **23,** rotating arm **21** being attached to foot assembly tubular member **24.** However, when operating handle **54** or **54'** is in its disengaging position, that is when it has been moved toward the head of the bed, selector arm **62** elevates the head link **38** so that notch **52** becomes disengaged with clevis pin extension **27'**. In this position operation of motor **28,** gear box **30** and elevating arm **32** to cause counter-clockwise revolution of head assembly tubular member **20,** and the concomitant elevation of head assembly **6,** is not transmitted through the linkage mechanism to foot assembly **10** and thus only the head assembly **6** is elevated.

It will be seen from the above description that there is provided herewith a simple mechanical means whereby a single operating mechanism can be utilized to perform a double function, that is to say cause a hospital bed to be moved on either the Fowler position alone or both the Fowler and the Contour positions, simultaneously. The selection of the desired position can be accomplished by a simple mechanical adjustment by the bed occupant.

To summarize briefly, the instant invention relates to a hospital bed mechanism whereby the mechanical elevation of the head assembly may be transmitted through simple mechanical linkage to the foot assembly or the head assembly may be elevated without elevating the foot assembly. The selection can be simply and efficiently accomplished by the bed occupant or by an attendant as desired.

What is claimed is:

1. A hospital bed structure which comprises

a pair of side rail members;

an intermediate assembly linking its lateral side attached to said pair of side rail members;

a head assembly pivotally attached to one end of said intermediate assembly;

a foot assembly pivotally attached to the other end of said intermediate assembly;

elevating means fixedly attached to said pair of side rail members and pivotally attached to said head assembly;

linking means fixedly attached to said foot assembly and means for removably attaching said linking means to said head assembly,

said linking means comprising a head linkage member, an intermediate linkage member and a foot linkage member, said intermediate linkage member being pivotally attached to one of said side rail members and pivotally attached at one end to said head linkage member and at the other end to said foot linkage member;

manually operable means for engaging and disengaging the attachment of said linking means to said head assembly;

pin means;

means attached to the head assembly to link the pin means to the foot assembly; and

means to engage the linkage means.

2. A structure according to claim **1** comprising, in addition:

operable means to move the pin means into engageable and disengageable positions relative to the head linkage member.

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